

66472

On the Problem of Reinforcement of High Pressure  
Containers

NOV/20-129-1-24/64

on the basis of this principle. 4 wedges with spherical surfaces, fit together by careful grinding (which represent the high-pressure container), are inside of a steel-bandage. The wedges form a channel, which contains a pyrophyllite-cylinder, with the sample to be investigated. This construction withstands pressures of more than 50000 atmospheres at high temperatures. In this construction the wedges work almost without backing. The results of such an experiment (polymorphic conversion of bismuth) is illustrated by a diagram. The pressure, attained during this experiment, exceeds the conversion pressure of bismuth almost by the double. Repeated experiments at ~ 50000 atmospheres and at temperatures of 1500°, over many hours, caused no noticeable alteration at the internal surface of the wedges. By producing a backing for the moving anvils, by production of the pistons and the wedges from hard alloys, the maximum attainable pressures may be increased. M. D. Pushkinskiy took part in the investigations. There are 3 figures and 3 references, 1 of which is Soviet.

4

Card 3/4

66478

On the Problem of Reinforcement of High Pressure  
Containers

SOV/20-129-1-24/64

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii  
nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelins-  
kiy of the Academy of Sciences, USSR). Gosudarstvennyy institut  
azotnoy promyshlennosti (State Institute of Nitrogen Industry)

PRESENTED: July 3, 1959, by B. A. Kazanskiy, Academician

SUBMITTED: June 30, 1959

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Card 4/4

S/064/60/000/005/005/009  
B015/B058

AUTHORS: Tsiklis, D. S., Kulikova, A. I., Shenderoy, L. I.

TITLE: Phase Equilibrium in the System Ethanol - Ethylene - Water  
at High Pressures and High Temperatures

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 5, pp. 49 - 54


TEXT: Specific data on the phase equilibrium in the three-component system water-ethylene-ethanol at a pressure of up to 200 atm and temperatures between 200° and 300°C must be known for the ethylene hydration under rational technological conditions. Present investigations were conducted for this purpose according to the static method.

V. I. Alisova participated in the experimental part of the work. Four solutions with 2.3, 6.1, 10.5, and 21.5 mole% ethanol in water were investigated, the composition of the coexisting phases in the system ethanol-water was determined for 300°C (Table 1), and the corresponding values for 200° and 250°C were taken from publications. The interpolated values of the composition of the liquid and gas phase of the systems ethanol-water, water-ethylene and ethanol-ethylene-water

Card 1/2

Phase Equilibrium in the System Ethanol - S/064/60/000/005/005/009  
Ethylene - Water at High Pressures and B015/B058  
High Temperatures

(Tables 2,3) were defined from these data. The diagrams mentioned (Figs. 4-9) show that critical phenomena occur in the mentioned three-component system for the temperature- and pressure ranges investigated. It is established that the ethanol concentration decreases in the co-existing liquid solutions with the pressure- and temperature increase. It is shown that the formation of two liquid phases is possible at temperatures of up to 100°C under pressure, the one being able to contain 70% in weight of ethanol and more, which would make it possible to achieve a considerable improvement in the rectification. There are 9 figures, 3 tables, and 8 references: 3 Soviet, 3 US, and 2 German.



Card 2/2

TSIKLIS, D.S.; KLIKOVA, A.I.; SHENDERBY, L.I.

Phase equilibrium in the system ethanol-- ethylene - water at  
high pressures and temperatures. Khim.prom. no.5:401-406 J1-Ag  
'60. (MIRA 13:9)

(Ethanol) (Ethylene) (Phase rule and equilibrium)

AUTHORS:

Tsiklis, D. S., Shenderoy, L. I.,  
Koifman, A. N. (Moscow)

S/076/60/034/03/014/038  
B115/B016

TITLE:

Phase Equilibria<sup>1</sup> in the System Acetaldehyde<sup>1</sup> - Carbon Dioxide

PERIODICAL:

Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 3, pp 585-586 (USSR)

TEXT: The investigation of the phase equilibrium in the system acetaldehyde - carbon dioxide was carried out in a device already previously described (Refs 1,2) according to an operational method also described there. The system was investigated at 1, 25, and 50° and pressures of up to 100 atm. The carbon dioxide applied was purified and its purity checked. The results obtained are given in a diagram (Figure) and a table. It may be seen from the figure that liquid acetaldehyde and carbon dioxide are miscible in any ratio at temperatures below the critical temperature of CO<sub>2</sub>. At temperatures above the critical temperature of CO<sub>2</sub> the critical processes set in. The authors did not succeed in expressing the data for this system by the equation of I. R. Krichevskiy and N. Ye. Khazanova (Ref 3). The system carbon dioxide - acetaldehyde belongs to the concentrated solutions, the treatment of which is extremely difficult. There are 1 figure, 1 table, and 4 references, 3 of which are Soviet.

SUBMITTED:

June 10, 1958

Card 1/1

84694

S/020/60/134/004/021/023  
B004/B064

11.12.10

AUTHORS: Tsiklis, D. S., Kulikova, A. I., and Shenderay, L. I.

TITLE: The Volumes of Gaseous Solutions of Water in Ethylene at High Pressures and Temperatures

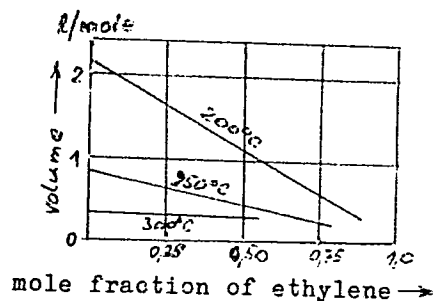
PERIODICAL: <sup>21</sup> Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 4, pp. 887-890

TEXT: The authors used a piezometer of constant volume to study the volumes of saturated solutions of water in compressed ethylene at 200 - 300°C and 100 - 150 atm. The apparatus is schematically shown in Fig. 1. A certain amount of water and ethylene was filled into the piezometer. Then, it was heated and stirred with a magnetic mixer, and pressure and temperature were measured. Samples were taken from the piezometer in portions, their water was condensed in an ampoule, and their ethylene collected in evacuated flasks. The solution was mixed after each sample taking, and the pressure measured. Table 1 shows the experimental data. Fig. 2

Card 1/4

The Volumes of Gaseous Solutions of Water in Ethylene at High Pressures and Temperatures

S/020/60/134/004/021/023  
B004/B034



shows the water volumes in ethylene in the saturated state obtained by extrapolation. The authors represent the behavior of the solutions by the virial equation  $p v = RT \left[ 1 + B(T)/v + C(T)/v^2 \right]$  (1). To determine the virial coefficient, (1) was transformed:  $[(p v / RT) - 1] v = B + C/v$  (2). The values on the left-hand side of equation (2) result in straight lines from whose ordinate section and inclination the authors determined  $B_p$  and  $C_p$  respectively for the mixture given. To find the virial

Card 2/4



84694

The Volumes of Gaseous Solutions of Water in Ethylene at High Pressures and Temperatures

S/020/60/134/004/021/023  
B004/B064

coefficients for any concentration, the authors calculated, by means of the equations  $B_p = B_{11}N_1^2 + 2B_{12}N_1N_2 + B_{22}N_2^2$  (3) and

$C_p = C_{111}N_1^3 + 3C_{112}N_1^2N_2 + 3C_{122}N_1N_2^2 + C_{222}N_2^3$  (4), the virial coefficients  $B_{11}$ ,  $B_{22}$ ,  $C_{111}$ ,  $C_{222}$  for pure ethylene and water, and  $B_{12}$ ,  $C_{112}$ ,  $C_{122}$  for the binary and ternary interactions. These values are given in Table 2. The pressure was calculated from equation (1). Table 3 shows a good agreement between the measured and the calculated pressure. Accordingly, equation (1) yields correct results for the range in question. The authors thank I. R. Krichevskiy for advice. V. I. Alisova took part in experimenting. There are 2 figures, 3 tables, and 6 references: 4 Soviet, 2 US, and 1 German.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza (State Scientific Research and Planning Institute of the Nitrogen Industry and the Products of Organic Synthesis)

Card 3/4

The Volumes of Gaseous Solutions of Water in  
Ethylene at High Pressures and Temperatures

S/020/60/134/004/021/023  
B004/B064

PRESENTED: May 18, 1960, by A. N. Frumkin, Academician

SUBMITTED: May 18, 1960

X

Card 4/4

S/120/61/000/002/040/042  
E210/E594

AUTHOR: Tsiklis, D. S.

TITLE: Membrane-type Zero Instrument for Measuring High Pressures

PERIODICAL: Pribery i tekhnika eksperimenta, 1961, No.2, pp.192-193

TEXT: In measuring pressure it is frequently necessary to separate the operating medium from the metering equipment. This can be done either by bellows or by a zero indicating membrane, which is based on indicating the equilibrium of the forces on its two sides. The thinner the membrane, the smaller the pressure drop that it can withstand. In this paper a zero instrument is described which is based on the principle of fully supporting the membrane, a principle used earlier for designing a membrane-type valve. It is stated that after the instrument described was built, a description of a similar design, operating with counter pressure produced by compressed nitrogen, was published by D. White (Rev. Scient. Instrum., 1958, 29, No.7, 648). The membrane is supported on both sides and, therefore, it can withstand without destruction pressure drops of tens and hundreds of atmospheres. The sensitivity of the instrument is sufficient for measuring the pressure with an accuracy up to hundredths or even thousandths of an atmosphere. The

Card 1/4

Membrane-type Zero Instrument ...

S/120/61/000/002/040/042  
E210/E594

instrument consists of a body 1, a nipple 2 between which the membrane 4, made of 0.1 to 0.2 mm thick brass, is held by a nut 3. Into the top part of a body 1 a nipple 5 is threaded on, which carries a spindle 6 with an insulated electric lead 7. The spindle moves in a stuffing box 8, which is protected from the effects of high temperature by cooling. The electrode 9 with the end-piece 10 is connected to the spindle. The electrode and the end-piece are insulated from the body of the instrument by plastic washers 11 and 12 into which holes are drilled for allowing oil flow. The shaped washer 12 also forms the top protecting surface of the membrane for the case of a sudden pressure increase in the apparatus. The lower holding surface is formed by the nipple 2 through which a hole of 0.1 mm diameter is drilled, which joins the cavity of the membrane with the apparatus. On increasing the pressure from the top, the membrane is pressed onto the surface of the nipple and, due to the fact that the hole is very small, it will be able to withstand a pressure difference of about 100 atm and more. The instrument operates as follows: if the pressure in the apparatus is larger than above the membrane, it touches the

Card 2/5

Membrane-type Zero Instrument ...

S/120/61/000/002/040/042  
E210/E594

end-piece 10, closes the electric circuit and ignites the lamp 13. The oil fed by the press into the nipple 14 pushes the membrane away from the contact and extinguishes the lamp. By increasing or reducing the pressure, the membrane can be placed into a position when a change in the pressure by a 100th fraction of an atmosphere is enough to ignite or extinguish the lamp. For such a position of the membrane, the pressure is measured on the pressure gauge which is connected to the line of the nipple 14. It is pointed out that in measuring the pressure a contact must be ensured between the membrane and the electrode, otherwise transient resistances will form which bring about glow illumination of the lamp, even if the contact is broken. The contact will be the better the smaller the area of contact between the membrane and the end-piece and, from this point of view, it would be best to use a pointed needle. However, this would not be very safe for the membrane. Therefore, an end-piece 4 to 5 mm diameter should be used and, for reducing the current flowing into the circuit of the instrument, an ohmmeter should be used for indicating that the contact is closed. The instrument described enabled measuring reliably

Card 3/5

Membrane-type Zero Instrument ...

S/120/61/000/002/040/042  
E210/E594

pressures in a system which was at a temperature of 300°C. At atmospheric pressure, pressure changes of about 30 mm Hg col. were sufficient for the membrane of the instrument to open or close the circuit. There are 1 figures and 3 references: 2 Soviet and 1 English.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i  
proyektnyy institut azotnoy promyshlennosti i  
produktov organicheskogo sinteza  
(State Scientific Research and Design Institute  
of the Nitrogen Industry and of Organic Synthesis  
Products)

SUBMITTED: May 19, 1960

Card 4/5

TSIKLIS, D.S., (Moscow)

Packingless membrane valve. Zhur. fiz. khim. 35 no.3:669 Mr '61.  
(MIRA 14:3)

1. Gosudarstvennyy institut azotnoy promyshlennosti.  
(Valves)

TSIKLIS, D.S.; KULIKOVA, A.I.

Calculating the equilibrium constant for the synthesis of ethyl alcohol. Zhur. fiz. khim. 35 no. 4:954-955 Ap '61. (MIRA 14:5)

1. Nauchno-issledovatel'skiy institut azotnoy promyshlennosti i produktov organicheskogo sinteza.  
(Ethyl alcohol) (Chemical equilibrium)



TSIKLIS, D.S.; KOFMAN, A.N.

Phase and volume relationships in the system ethylene - ethyl  
alcohol. Zhur. fiz. khim. 35 no.5:1120-1124 My '61.  
(MIRA 16:7)

1. Gosudarstvennyy institut azotnoy promyshlennosti.  
(Ethylene) (Ethyl alcohol)

S/020/61/136/002/031/034  
B004/B056

AUTHORS: Taiklis, D. S. and Vasil'yev, Yu. N.

TITLE: Surface Tension on the Interface Between Two Gas Phases at High Pressures

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 2, pp. 394-397

TEXT: It was the purpose of the present work to investigate the equilibrium between gases by measuring the surface tension on the interface between the two gas phases. For this purpose the authors used the system helium - ethylene. Surface tension was determined from the capillary rise. The method is based upon measuring the differences in height  $\Delta h$  in capillary tubes having the diameters  $R_1$  and  $R_2$ . If the wetting angle  $\theta$  of the heavier phase is equal to zero, and if  $R_1$  and  $R_2$  are small,  

$$\sigma_2 = [\Delta h / (1/R_1 - 1/R_2)] \cdot 0.5g(\rho' - \rho'') \quad (1) \text{ holds. } \rho', \rho'' \text{ are the densities of the phases, and } g \text{ is the gravitational acceleration. The phase density}$$

Card 1/04

Surface Tension on the Interface Between  
Two Gas Phases at High Pressures

S/020/61/136/002/031/034  
B004/B056

was measured by a method suggested in Ref. 6. In a high-pressure device He and  $C_2H_4$  were mixed with a magnetic stirrer under conditions at which phase separation occurred; samples were taken from the upper and lower phases, and their composition was determined from the molecular weights. Data are given in Table 1. The capillary rise was determined in the device shown in Fig. 1. It consisted of a high-pressure column 1, which was in a thermostat; observation windows 2; capillary tubes 3 fastened to frame 4. Behind the capillary tubes there was the ground-glass plate 7. When moving the frame 4, which was connected to the armature of the magnetic stirrer, the phases in the container and in the capillary tubes were mixed. The gas components were compressed by means of a mercury press in container 6. The capillary tubes were 0.2 - 0.6 mm in diameter; the capillary rise was measured by a KM-6 (KM-6) cathetometer. The data obtained by measuring the capillary constant  $a^2 = \Delta h / (1/R_1 - 1/R_2)$  are given in Table 2 (in the form of an extract):

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Surface Tension on the Interface Between  
Two Gas Phases at High Pressures

S/020/61/136/002/031/034  
B004/B056

$p, \text{kg/cm}^2$	$a^2 \cdot 10^5 \text{ cm}^2$
at 13°C	
227	48.0
400	196
600	470
665	592
at 16°C	
415	54.0
450	104.0
550	256
680	446
at 18°C	
490	51.6
505	66.0
610	207
720	362

The wetting angle was found to equal zero. The data of the surface tension calculated from (1) are shown in Fig. 2. It is assumed that the curves of the function  $\sigma = f(p)$  approach the abscissa tangentially, and that the surface tension vanishes at the critical point. From the equation by Gibbs

$\Gamma_{2(1)} = -(\partial\sigma/\partial\mu_2)_{\text{coexist}, T}$  (2), where  $\mu_2$  is the chemical potential of the second component and  $\Gamma_{2(1)}$  the molecular excess of the second component, and on the basis of experimental data,  $\sigma = \alpha(p-p_{\text{crit}})^2$  (7) was found.

The function (7) gave a straight line for all temperatures within a wide pressure range (Fig. 3). From the inclination of the straight

line, the coefficient  $\alpha$  was calculated, and  $\Gamma_{2(1)}$  was plotted as a

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Surface Tension on the Interface Between  
Two Gas Phases at High Pressures

S/020/61/136/002/031/034  
B004/B056

function of pressure (Fig. 4). A. N. Kofman took part in the experiments. The authors thank I. R. Krichevskiy for his help and discussions. There are 4 figures, 3 tables, and 8 references: 7 Soviet and 1 US.

ASSOCIATION: Nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza  
(Scientific Research and Planning Institute of the Nitrogen Industry and Synthesis of Organic Products)

PRESENTED: July 18, 1960, by P. A. Rebinder, Academician

SUBMITTED: July 13, 1960

Legend to Table 1: a)  $p$ ,  $\text{kg/cm}^2$ ; b)  $g/\text{cm}^3$ ;  $N_2''$ ,  $N_2'$  = mole %  $\text{C}_2\text{H}_4$  in the light and in the heavy phase. Legend to Fig. 1: a) to the potentiometer; b)  $\text{kg/cm}^2$ , c) to the mercury press. Legend to Fig. 2: a)  $\text{kg/cm}^2$ , b)  $\text{erg/cm}^2$  Legend to Fig. 3: a)  $\text{kg/cm}^2$ , b)  $\text{erg/cm}^2$  Legend to Fig. 4: a)  $\text{kg/cm}^2$ , b)  $\text{mole/cm}^2$ .

Card 4/8

S/020/61/140/006/026/030  
B107/B101

AUTHORS: Tsiklis, D. S., and Borodina, M. D.

TITLE: Formation of acetylene during adiabatic compression of methane

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 6, 1961, 1376 - 1379

TEXT: The formation of acetylene was studied in mixtures of methane with hydrogen, nitrogen, or rare gases during adiabatic compression up to 9000 kg/cm<sup>2</sup>. A piston was used for compression. The plant is described in detail elsewhere: Yu. N. Ryabinin, ZhETF, 23, 461 (1953); D. S. Tsiklis, Tekhnika fiziko-khimicheskikh issledovaniy pri vysokikh davleniyakh (Technique of physicochemical investigation at high pressures), 1958. The acetylene content was determined colorimetrically, if it was above 0.1%, however, argentometrically. According to Ya. S. Kazarnovskiy, the equilibrium constant of the reaction  $2 \text{CH}_4 = \text{C}_2\text{H}_2 + 3 \text{H}_2$  is  $\log K = -18077/T + 13.09 \log T - 0.02347 T + 0.06335 T^2 - 107520/T^2 - 23.9$ . This would mean that at 1500°K and 10000 kg/cm<sup>2</sup>, e. g., 2% acetylene should be formed.

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S/020/61/140/006/026/030  
B107/B101

## Formation of acetylene during...

Tests at this pressure, however, yielded no acetylene. Gas mixtures were used for further experiments, i. e. nitrogen with 2, 4, 14, and 38% methane; argon with 2, 4, 6, 7, and 14% methane; helium with 3, 6, and 14% methane; xenon with 7% methane; krypton with 3% methane. Table 1 gives the acetylene content and the yield, the values being obtained by graphic interpolation. Changes in the composition of the mixture due to gas losses during compression are slighter in the case of nitrogen, and more pronounced in mixtures with rare gases and hydrogen. The mean molecular weight was therefore determined before and after compression. Results: In mixtures with nitrogen, the highest yield was obtained at 2% CH<sub>4</sub> + 98% N<sub>2</sub>.

The yield versus pressure plot shows a sharp peak. No acetylene forms in the mixture with hydrogen. In the mixtures with rare gases the yield was highest with argon. From reaction-kinetical considerations it follows that yields are a maximum, when the masses of the colliding molecules are about equal. There are 4 figures, 1 table, and 9 references: 3 Soviet and 6 non-Soviet. The four most recent references to English-language publications read as follows: P. A. Longwell, B. H. Sage, J. Chem. and Eng. Data, 5, 322 (1960); G. B. Skinner, W. E. Ball, J. Phys. Chem., 64, 1025 (1960); G. B. Skinner, E. M. Sokoloski, J. Phys. Chem., 64, 1028

Card 2/4 3

Formation of acetylene during...

S/020/61/140/006/026/030  
B107/B101

(1960); S. W. Benson, The Foundations of Chemical Kinetics, 1960.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza (State Design and Planning Scientific Research Institute of the Nitrogen Industry and for Products of Organic Synthesis)

PRESENTED: May 4, 1961, by S. I. Vol'fkovich, Academician

SUBMITTED: April, 28, 1961

Table 1. Acetylene yield in compression of mixtures of methane with nitrogen, argon, helium, xenon, and krypton as a function of pressure.  
Legend: (a) Acetylene content of the gas mixture, in % by volume; (1) Acetylene yield, in %; (1) compression pressure, in kg/cm<sup>2</sup>; (2) mixture of:

Card 3/A 3



TSIKLIS, D.S.; KULIKOVA, A.I.; SHENDEREY, L.I.

Calculation of the thermodynamic properties of gaseous solutions of  
water in ethylene and the plotting of thermal diagrams. Khim.prom.  
no.1:52-56 Ja '62. (MIRA 13:1)

(Ethylene) (Water) (Thermodynamics)

TSIKLIS, D.S.; KULIKOVA, A.I.; Prinimala uchastiye: ALISOVA, V.I.

Chemical equilibrium in the synthesis of from nonstoichiometric  
mixtures. Khim.prom. no.3:172-174 Mr '62. (MIRA 15:4)  
(Ammonia) (Chemical equilibrium)

TSIKLIS, D.S.; KULIKOVA, A.I.; Prinimali uchastiye: SHENDEREX, L.I.;  
ALISOVA, V.I.

Chemical equilibrium in the system ethylene - water - ethyl  
alcohol at high pressures and temperatures. Khim.prom. no.6:413-  
418 Je '62. (MIRA 15:11)  
(Ethylene) (Ethyl alcohol) (Chemical equilibrium)

TSIKLIS, D. S.; BORODINA, M. D.

Formation of hydrogen cyanide in the adiabatic compression of methane mixtures with ammonia. Dokl. AN SSSR 147 no.4: 860-862 D '62. (MIRA 16:1)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza.

(Hydrocyanic acid) (Methane) (Ammonia)

TSIKLIS, D.S.; SHENDEREY, L.I.; EL'NATANOV, A.I.

Phase and volume ratios in the system toluene - nitrogen.  
Khim. prom. no.5:348-353 My '63. (MIRA 16:8)

TSIKLIS, D.S.; LESNEVSKAYA, L.S.

Heating of solid bodies in an adiabatically compressed gas.  
Fiz tver. tela 5 no.10:2978-2980 0 '63. (MIRA 16:11)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut  
azotnoy promyshlennosti i produktov organicheskogo sinteza, Moskva.

L 12874-63

EPF(c)/EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JW

ACCESSION NR: AP3002936

S/0076/63/037/006/1355/1361 60

AUTHOR: Tsiklis, D. S.; Vasil'yev, Yu. N. 59

TITLE: Interfacial tension between two nonmiscible gas<sup>2</sup> phases

SOURCE: Zhurnal fizicheskoy khimii, v. 37, no. 6, 1963, 1355-1361

TOPIC TAGS: interfacial tension, nonmiscible gas phase, helium, ethylene, carbon dioxide

ABSTRACT: The interfacial tension between two gaseous phases of the systems helium-ethylene at 13, 16, 18 degrees and pressures up to 700 kg/square cm, and helium-carbon dioxide at 35 and 37 degrees and pressures up to 700 kg/square cm has been measured. The pressure and temperature dependence of the interfacial tension near the critical point has been determined. A method of calculating has been proposed and the calculation made of adsorption in the system helium-ethylene at 13, 16, and 18 degrees. Orig. art. has: 22 equations, 3 tables, and 6 figures. The authors express deep thanks to I. R. Krichevskiy for thermodynamic data, constant attention, advice and assistance in the work.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza (State Design and Planning Scientific Research Institute of the Nitrogen Industry and Organic Products Synthesis)  
Card 1/2

L 17718-63

EWP(j)/EPF(c)/EWP(q)/EWT(m)/BDS AFFTC ASD #Pc-4/Pr-4

RM/WW/JD

ACCESSION NR: AP3004071

S/0076/63/037/007/1613/1616

AUTHORS: Tsiklis, D. S.; Kulikova, A. I.; Kafman, A. N.

TITLE: Compressibility of homogeneous mixtures of helium and ethylene at elevated pressures

SOURCE: Zhurnal fizicheskoy khimii, v. 37, no. 7, 1963, 1613-1616

TOPIC TAGS: gas compressibility, helium ethylene

ABSTRACT: By making use of data concerning the volumetric behavior of a binary system in a wide range of temperatures, pressures, and compositions, the concentration dependence of the volatility of the gaseous solution component can be found, and, a judgment can be made concerning the presence of a limited, mutual solubility of gases in the substance. The parameters of the critical point can also be determined. Authors used the system helium-ethylene to corroborate this. It is necessary to know the compressibility of various homogeneous gaseous mixtures of helium and ethylene which differ by composition in order to construct the proper graphs. Authors selected a temperature of 18C and pressures up to 400 absolute atm. The measurements of compressibility were done by the method described by I. R. Krichevskiy and D. S. Tsiklis (Dokl. AN, SSSR, 78, 1958,

Ccird 1/2



L 17718-63

ACCESSION NR: AP3004071

2

1169). Mixtures containing 0.202, 0.445, 0.639 and 0.808 mole fractions of ethylene were analyzed at 18C and pressures up to 400 absolute atm. Experimental results are tabulated. A curve was plotted and it was found that, at a pressure of 400 absolute atm. and with an 0.65 mole fraction of ethylene, the point of inflection is at the horizontal tangent, which, in accordance to the theory, agrees with the data obtained by analyzing the gas-gas equilibrium in this system. "Authors wish to thank I. R. Krichevskiy for his attention to this work and valuable hints". Orig art. has: 3 figures, 4 tables and 3 formulas.

ASSOCIATION: Gosudarstvennyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza (State institute for the nitrogen industry and organic synthesis products)

SUBMITTED: 04Aug62

DATE ACQ: 15Aug63

ENCL: 00

SUB CODE: FH, CH

NO REF SOV: 003

OTHER: 003

2/2

Card

TSIKLIS, D.S.; SHENDERREY, L.I. Prinimala uchastiye GORYUNOVA, N.P.

Phase equilibria in the system benzoic acid - toluene - nitrogen.  
Khim. prom. 40 no.11:841-843 N '64 (MIRA 18:2)

YEREMIN, D.S.; MASHENKINA, T.A.

Mutual limited solubility of gases in the water - ice system.  
Dokl. AN SSSR 157 no. 2:482-483 1974. (MIRA 17/74)

1. Gosudarstvennyy nauchno issledovatel'skiy i proyektnyy institut  
azotnoy promyshlennosti i produktov organicheskogo sinteza.  
Predstavleno akademikom S.S. Vasil'kovichem.

TSIKLIS, D.S.; MASLENNIKOVA, V.Ya.

Mutual limiting solubility of gases in the system water - nitrogen  
Dokl. AN SSSR 161 no.3:645-647 Mr '65. (MIRA 18:1)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut  
azotnoy promyshlennosti i produktov organicheskogo sinteza. Sub-  
mitted August 27, 1964.

ACC NR: AM6015016

Monograph

UR/

TSiklis, Daniil Semenovich (Doctor of Chemical Sciences)

Techniques of physical and chemical research on high and very high pressures  
(Tekhnika fiziko-khimicheskikh issledovaniy pri vysokikh i sverkhvysokikh  
davleniyakh) 3d ed., rev. and enl. Moscow, Izd-vo "Khimiya", 1965. 415 p. illus.,  
biblio., index. Errata slip inserted. 4500 copies printed.

TOPIC TAGS: high pressure material, superhigh pressure, high pressure chamber, high  
pressure research

PURPOSE AND COVERAGE: This reference book on physico-chemical investigation methods  
at high and superhigh pressures describes problems of selecting materials and  
designing high- and superhigh-equipment. Methods for producing and measuring high  
pressures and temperatures and methods of mixing and circulation under pressure are  
described. The compressibility of gases and liquids is also covered. Each chapter  
has its own bibliography. The book is intended for engineering and technical  
personnel engaged in physico-chemical research conducted at high pressures.

TABLE OF CONTENTS:

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1. Structural materials used for work at high and superhigh pressures -- 9

Card 1/2

UDC: 543.5(018):541.12.034.2

ACC NR: AM6015016

2. Designing and construction of high and superhigh pressure equipment -- 44
3. Methods for producing pressure at normal and high temperatures -- 80
4. Methods for measuring high pressures -- 126
5. Measuring the flow rate and temperature of compressed matter -- 180
6. Parts of high pressure equipment -- 190
7. Mixing and circulation under pressure -- 242
8. General equipment for a high pressure laboratory -- 260
9. Investigation methods of phase equilibrium at high pressures -- 268
10. Determining the compressibility of gases and fluids -- 318
11. Methods for measuring surface tension and wettability -- 370
12. Optical, x-ray and electric measurements -- 384

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 248/ OTH REF: 211

Card 2/2

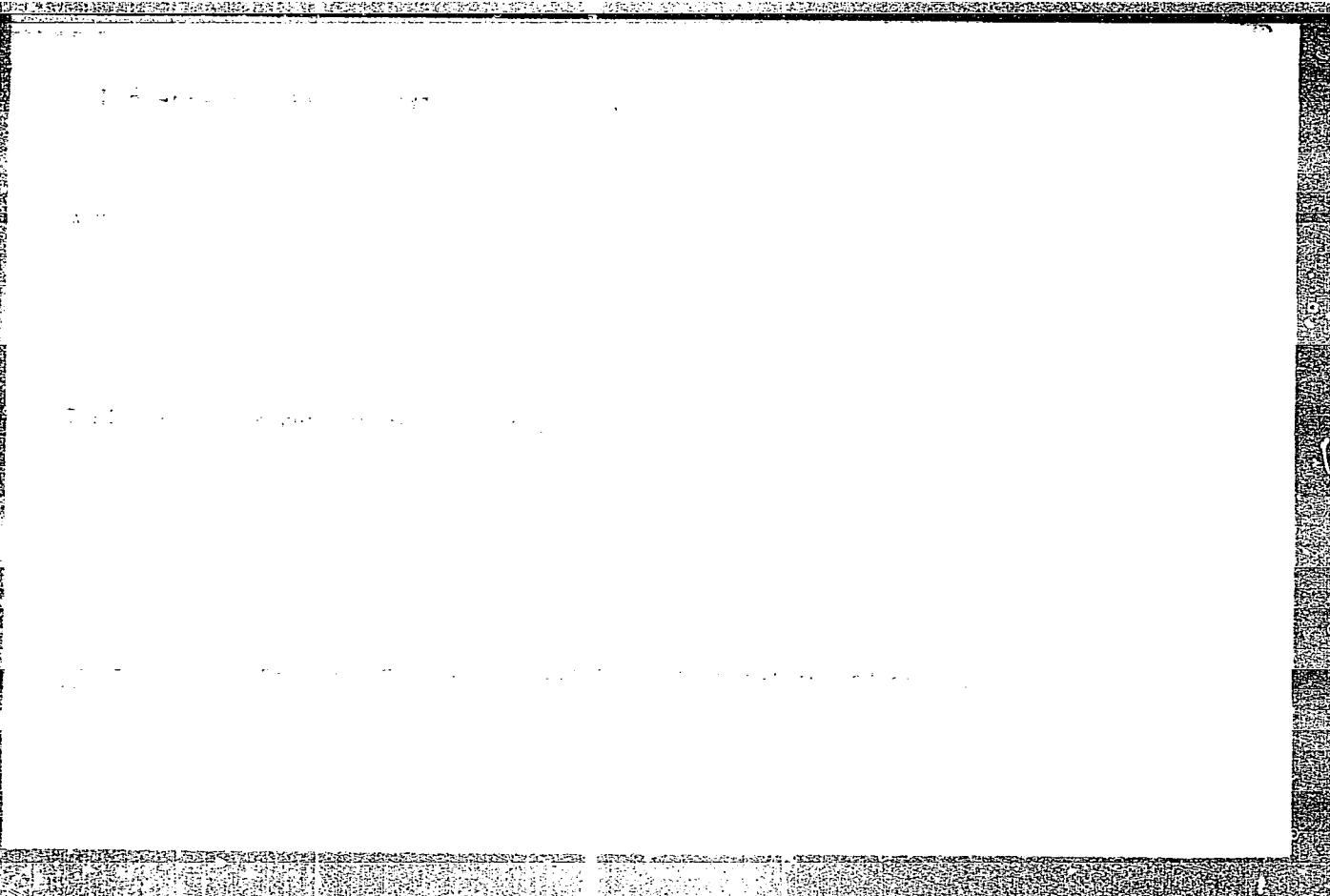
TSIKLIS, D.S.; KULIKOVA, A.I.

Determination of the compressibility of oxygen under pressures  
up to 10 000 atm. and at temperatures up to 400°C. Zhur.fiz.khim.  
39 no.7:1752-1756 JI '65. (MIRA 18:8)

1. Gosudarstvennyy institut azotnoy promyshlennosti.

**"APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757030002-6**



**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757030002-6"**



"APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757030002-6

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001757030002-6"

TSIKLIS, Daniil Semenovich, doktor khim. nauk; LEVIT, G.Ye.,  
red.

[Equipment for physicochemical studies at high and ultra-high pressures] Tekhnika fiziko-khimicheskikh issledovaniy pri vysokikh i sverkhvysokikh davleniyakh. Izd.3., perer. i dop. Moskva, Khimiia, 1965. 415 p.

(MIRA 19 1)

AUTHORS: Gliklikh, M.O., Tsiklis, M.I.

Sov/106-58-2-8/16

TITLE: One Method for the Forced Synchronisation of Photo-  
telegraph Instruments (Ob odnom sposobe prinuditel'noy  
sinkhronizatsii fotodelegrafnykh apparatov)

PERIODICAL: Elektrosvyaz', 1958, Nr 2, pp 59 - 64 (USSR).

ABSTRACT: The essential block-diagram of the receiving apparatus is shown in Figure 1. In Block 1, the line synchronising pulses are separated out and formed. Block 3 is a pick-off which derives pulses from the rotation of the synchronous motor 6. These pulses are compared in phase with those from 1, amplified in 4 and applied to the dynamic brake 5 which opposes the rotation of 6. In the absence of braking, the latter's speed is slightly greater than nominal. Figure 2 shows the torque-slip characteristic of the asynchronous motor. Eq.(8) is the dynamic torque equation including the effects of dry and viscous friction. Figure 4 shows how the pulse from Block 1 establishes a voltage across the capacitance in the cathode circuit of  $L_1$  and the pickoff on the asynchronous motor transfers this charge to

Card 1/2

Sov/106-58-2-8/16

One Method for the Forced Synchronisation of Photo-telegraph  
Instruments

another capacitance feeding the grid of the valve which controls  
the brake. Eq.(13) may be used to calculate the power required  
by the motor for a given change in frequency.  
There are 4 figures.

SUBMITTED: October 12, 1956

Card 2/2    1. Facsimile communications systems--Synchronization    2. Synchros  
--Performance

А. Я. Корнилов  
Анализ систем амплитудной селекции

9 июня  
(с 10 до 22 часов)

В. Н. Ершов,  
О. В. Евангелист-Чижов  
Генератор импульсов тока квадратичной формы

В. П. Юрченко,  
Ю. Е. Карачин,  
Л. В. Афанасьев  
Вопросы защиты с помощью электронно-лучевых труб  
от воздействия фотоэффекта и электрофотоэффекта

А. А. Галакти,  
Д. А. Тарасов  
Новая система телеметрирования и измерения

З. А. Дачин,  
Л. А. Чупин,  
Б. Н. Ширбаев  
Применение феррита с ППГ в полупроводниковых  
системах телеметрического контроля

25

10 июня  
(с 10 до 16 часов)

С. В. Гурвич,  
В. И. Сасанов

Взаимодействие нелинейных элементов с не-  
линейными элементами

М. В. Астахов

Определение пропускной способности  
несколько телеметрических групп по двум точкам  
структурной характеристики

М. Г. Маронин,  
М. И. Пустовит

Четырехканальная измерительная система для теле-  
метрических групп

М. О. Галакти,  
М. И. Пустовит

В. С. Калашин,  
В. И. Морозовский

Контроль качества телеметрических  
групп во время работы телецентра

10 июня  
(с 10 до 22 часов)

27

report submitted for the Centennial Meeting of the Scientific Technological Society of  
Radio Engineering and Electrical Communications in. A. S. Popov (VSEK), Moscow,  
8-12 June, 1959

*Tsiklis, M.I.*

AUTHOR GLIKLIKH M.O. and Tsiklis M.I. PA - 2819  
 TITLE Videography. (Videozapis'. - Russian)  
 PERIODICAL Radiotekhnika 1957, Vol 12, Nr 3, pp 10 - 17 (U.S.S.R.)  
 Received: 5/1957 Reviewed: 6/1957  
 ABSTRACT Even if the most promising kind of videography is the magnetic one in the author's opinion, the elaboration and further development of photographic methods described on the present paper are recommended. This method are:  
 1.) The system with uniform motion of the film and a electro-optical compensation for the non-uniformity of the film motion.  
 2.) The system using the postluminescence of the valve.  
 3.) The system with two image windows. In the description of the first systems it is pointed out that an essential disadvantage is the impossibility of making use of the postluminescence of the valve. Besides, the shrinkage of the film must be taken into account. For this pupose a correction by means of an automatic electron-optical compensation is carried out for the modification of perforation. In spite of some complications in the carrying out of these corrections, production and adjustment of the optical compensator is facilitated. In the second system a tele-

CARD 1/2

Videography.

PA - 2819

vision screen with a longer time for postluminescence than for transmission of the television field is used. The necessity of correction is the weak point of this system, because the already limited contrast range of the writing valve is even more diminished. With the third system there are three possibilities:

- 1.) With two valves from the screens of which projection is directed to two image windows.
  - 2.) Splitting up the beam of light by means of a cube with a semitransparent diagonal.
  - 3.) Switching of the light current by means of a mirror shutter.
- The disadvantage of this system is that the motion-picture part of the apparatus becomes more complicated.  
(8 illustrations.)

ASSOCIATION: not given.

PRESENTED BY: -

SUBMITTED: 12. 10. 1956.

AVAILABLE: Library of Congress.

CARD 2/2

*TSIKMAN*  
KOPITAYKO, S., inzh.; *TSIKMAN IV* TSIKMAN, N., inzh.; GALKIN, A., inzh.

Assembling prefabricated wooden trusses. Stroitel' no.3:19 Mr '58.  
(Trusses) (MIRA 11:2)



DUDEROV, G.N.; Prinimali uchastiye: ZORIN, N.; TSIKMAN, Ye.; SEROVA, A.M.

Effect of small additions of barium, magnesium, and calcium  
salts on the firing and technical properties of high-alumina  
bodies. Trudy MKHTI no.37:148-156 '62. (MIRA 16:12)

4

Photochemical decomposition of halogen derivatives of benzene. O. P. Semenova and G. S. Taikunov. *J. Phys. Chem. (U.S.S.R.)* 18, 311-14(1944).—Exptl. data on the photochem. decompn. of *chlorobenzene*, *bromobenzene*, and *iodobenzene* are shown in 2 tables. In each case the limit of decompn. lies at 2400 Å., corresponding to the region of complete absorption and an energy of 5.1 v.

F. H. Rathmann

ACC NR: AP6033847 (A) SOURCE CODE: UR/0117/66/000/008/0034/0035

AUTHORS: Tsikol', D. N.; Borsuk, Z. I.

ORG: none

TITLE: Biological hand protectors

SOURCE: Mashinostroitel', no. 8, 1966, 34-35

TOPIC TAGS: industrial hygiene, petroleum industry, protective coating, kaolin, alcohol

ABSTRACT: Two types of paste for protecting hands of workers handling substances and materials harmful to the skin have been developed by the Laboratory of Coatings "Mospromproyekt" (Laboratoriya pokrytiy "Mospromproyekt"). Paste No. 1 is based on kaolin, glycerine, soap, and water; paste No. 2 is made up of casein glue, glycerine, ammonia, alcohol, and water. The amounts and types of these materials are given in detail, the methods for their production are described, and their application to and removal from workers' hands are explained. The pastes may be made more visible by the addition of a nonaggressive pigment. The third paste, recommended by the Institute of Hygiene and Occupational Diseases AMN im. Obukh (Institut gigiyeny truda i profzabolevaniy AMN) for work with petrochemicals and several solvents is free of alcohol. It consists of methyl cellulose, glycerine, kaolin, talcum, and water in specified proportions. A table shows the amount of ingredients of the first two pastes, used by a worker in one day. Orig. art. has: 1 table.

Card 1/1 SUB CODE: 06/ SUBM DATE: none

UDC: 613.632

AUTHOR: Tsikolin, G. 107-58-3-17/41

TITLE: Simple Frequency Modulator (Prostoy chastotnyy modulyator)

PERIODICAL: Radio, 1958, Nr 3, pp 24 - 25 (USSR)

ABSTRACT: The author describes two simple frequency modulators for use in ultra short wave transmitters in the 38 - 40 and 144 - 146 megacycle ranges, using an ordinary "MN-3" neon lamp or a "SG-5B" gas-discharge tube. The modulators described by the author showed good results in practical use. Figure 3 shows the circuit diagram of the master oscillator for the 38-40 megacycle range. Figure 4 shows the master oscillator for the 144 - 146 megacycle range. There are 2 circuit diagrams and 3 graphs.

1. Frequency modulation 2. Transmitters--Characteristics

Card 1/1

TSIKOLIN, G.D., inzh.

Automation of a process of measuring the resilience module  
and coefficient of internal friction at high temperatures.  
Izv. LETI no.48:45-65 '63. (MIRA 17:12)

ACCESSION NR: AR4015663

S/0081/63/000/021/0335/0336

SOURCE: RZh. Khimiya, Abs. 21M36

AUTHOR: Bluvshcheyn, M. N.; Tsikolin, G. I.; Zybkova, Z. K.

TITLE: Development and adaptation of an automatic device for measuring the temperature dependence of the elastic properties of refractory materials by a dynamic method

CITED SOURCE: Tr. Vses. gos in-ta nauchno-issled. i proktn. rabot orneuporn. prom-sti, vy\* p. 34, 1963, 81-100

TOPIC TAGS: refractory material, refractory material elastic property, refractory material test equipment, elastic property temperature dependence

ABSTRACT: Laboratory equipment was developed for determining the elastic properties of refractory materials at high temperatures. Variations in the frequency of flexing oscillations and oven temperatures are controlled automatically. The device was used to determine the temperature dependence of the flexing oscillation frequency and elasticity modulus for various refractory materials, i.e. fireclay, Dinas brick, magnesite, non-fired refractories and periclase-spinellide. It is

Card 1/2

ACCESSION NR: AR4015663

maintained that the equipment will find use in evaluating the effects of freezing, atmospheric pressure and other factors on the resonance characteristics of silicates. Bibl. with 13 references. Authors' summary.

DATE ACQ: 09Dec63

SUB CODE: MA, SD

ENCL: 00

Card 2/2

ACCESSION NR: AT4017553

S/3074/62/000/047/0046/0055

AUTHORS: Sbitnev, V. S. (Candidate of technical sciences, Docent);  
Tsikolin, G. I. (Assistant)

TITLE: A radio method for measuring the coefficient of internal friction

SOURCE: Leningrad. Elektrotekhnicheskiy institut. Izv., no. 47, 1962, 46-55

TOPIC TAGS: Internal friction, internal friction coefficient, resonant method, radio frequency method, flexural vibration, resonance characteristic, modulus of elasticity, friction coefficient

ABSTRACT: Several definitions of the internal friction coefficient of a solid are presented, and the relations between these definitions are given. It is shown that the simplest is the definition with the aid of a resonant characteristic obtained under flexural vibrations.

Card

1/4

3



ACCESSION NR: AT4017553

This serves as a method for the development of an instrument (type IKV-1) for the determination of the internal-friction coefficients of different solids, the operating principle of which is based on exciting mechanical oscillations in a specimen of the material and determining the natural frequency of these oscillations and the width of the resonant characteristic. The coefficient is  $K = 0.258(\Delta f/f)$  or  $K = 0.58(\Delta f/f)$ , depending on the level at which the width of the resonant characteristic is measured (0.25 or 0.5). The instrument can accommodate specimens 150--450 mm long, 40--100 mm wide, and 10--100 mm high. The operating frequency is 1.2--10 kcs. The oscillation frequency is measured accurate to 2% and the internal coefficient of friction is determined accurate to 5--10%. In addition, it is possible to use the equipment to measure the modulus of elasticity, accurate to 4--7%. Coefficients of friction ranging from  $k = 3 \times 10^{-4}$  upward can be handled. Schematic and block diagrams of the equipment are included. Orig. art. has: 8 figures.

Card 2/4

ACCESSION NR: AT4017553

ASSOCIATION: Leningradskiy elektrotekhnicheskii institut (Leningrad  
Electrotechnical Institute)

SUBMITTED: 00Feb61

DATE ACQ: 20Mar64

ENCL: 01

SUB CODE: MA, GE

NR REF SOV: 007

OTHER: 011

Card 3/4

SBITNEV, V.S., kand. tekhn. nauk, dotsent; TSIKOLIN, G.I., assistant

Radio engineering method for measuring the coefficient of  
internal friction. Izv. LETI no.47:46-55 '62. (MIRA 16:12)

nb585  
S/131/63/000/001/001/004  
B117/B101

AUTHORS: Bluvshhteyn, M. N., Tsikolin, G. I., Zykova, Z. K.

TITLE: Dynamic method for determining the modulus of elasticity of refractory materials at high temperatures automatically

PERIODICAL: Ogneupory, no. 1, 1963, 13 - 17

TEXT: To determine the modulus of elasticity of solids by the dynamic (sound) method (E. K. Keler and Z. I. Veselova, Ogneupory, 1956, no. 1) a laboratory device with automatic temperature control and recording of the bending vibrations was developed. Thereby the elasticity of refractory materials at high temperatures (up to 1400°C) can be determined with high accuracy and without subjective errors. The test specimen, in the form of a prism, is first weighed, then placed on high-alumina supports at the bottom of an electric furnace. The furnace is heated to 1400°C by carborundum heaters at a rate of 300 degree/hr. The temperature is measured by two thermocouples in the furnace lid. A 1,5w sound generator and a pickup of the same construction are placed under the furnace. Their principal element is a magnetic system of the type 1GA-1 (1GD-1) and each has a high-alumina needle making contact with the specimen. The vibrations  
Card 1/3

Dynamic method for determining...

S/131/63/000/001/001/004  
B117/E101

detected by the pickup needle are transformed into electric oscillations and passed on to the measuring device, which is of the type AM4-2 (AICH-2) and covers a range of 1800 - 8550 cps. Frequency errors of the sound generator reach a maximum of 2%. The resonance frequency is automatically recorded by an instrument of the type ДПТ-09 (EPP-09). Dial errors of the EPP-09 reach a maximum of 3%. The device, fed from the a.c. supply consumes about 200 w. The automatic rise in temperature is secured by programming. The modulus of elasticity is determined (maximum error 5 - 8%) by recording oscillations for 30 min at 20°C. Up to 150°C the temperature is manually controlled; then the automatic programming device is switched on. This operates more steadily and reliably if the furnace has been preheated. Throughout the test the temperature and the oscillation frequency are automatically recorded by the EPP-09 every 30 sec. Moduli of elasticity of various refractory materials were so determined. Specimens of chamotte, magnesite and Dinas showed the same changes in modulus of elasticity as determined by other methods according to published data. In unburnt periclase-spinellide specimens heated from 20 to 800°C a notable reduction of the modulus of elasticity was observed, which remained almost constant when the temperature was further increased. Light chamotte specimens showed an insignificant change of the modulus. There are 5 figures.

Card 2/3

Dynamic method for determining...

S/131/63/000/001/001/004  
B117/B101

ASSOCIATION: Vsesoyuznyy institut ogneporov (All-Union Institute of Refractories)

Card 3/3

BLUVSHTEYN, M.N.; TSIKOLIN, G.I.; ZYKOVA, Z.K.

Dynamic method of determining the elasticity modulus of  
refractories at high temperatures and the automatic control of  
testing. Ogneupory 28 no.1:13-17 '63. (MIRA 16:1)

1. Vsesoyuznyy institut ogneuporov.  
(Refractory materials--Testing)  
(Elasticity--Testing)  
(Automatic control)

BLUVSHTEYN, M.N., kand. tekhn. nauk; TSIKOLEN, G.I., inzh.; ZYKOVA, Z.K., inzh.

Developing and adopting automatic equipment for the determination  
by dynamic methods, of the temperature dependence of the elastic  
properties of refractories. Trudy Inst. ognep. no.34:81-100 '63.  
(MIRA 17:10)



LYUTYY, A.I. [Idutyi, A.I.]; NESTERKO, N.A.; ROSSIKHIN, V.S.; TSIKORA, I.L.  
[TSykora, I.L.]

Study of physical and chemical processes in the reaction zone of  
an acetylene flame. Ukr.fiz.zhur. 7 no.11:1214-1217 N '62.  
(MIRA 15:12)

1. Dnepropetrovskiy gosudarstvennyy universitet.  
(Acetylene lamps) (Flame)

**"APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757030002-6**

**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757030002-6"**

USSR/ Chemistry - Quantitative analysis

Card 1/1 Pub. 43 - 63/97

Authors : Nesterenko, V. K.; Rossikhin, V. S.; and Tsikora, I. L.

Title : Spectral analysis of small Cu, Pb, Bi and Fe admixtures in Sn

Periodical : Izv. AN SSSR. Ser. fiz. 18/2, 281-282, Mar-Apr 1954

Abstract : A method was developed for quantitative analysis of Sn for its content of Cu, Pb, Bi and Fe according to GOST (State Standard) 860-41. Table.

Institution : State University, Dnepropetrovsk

Submitted : .....

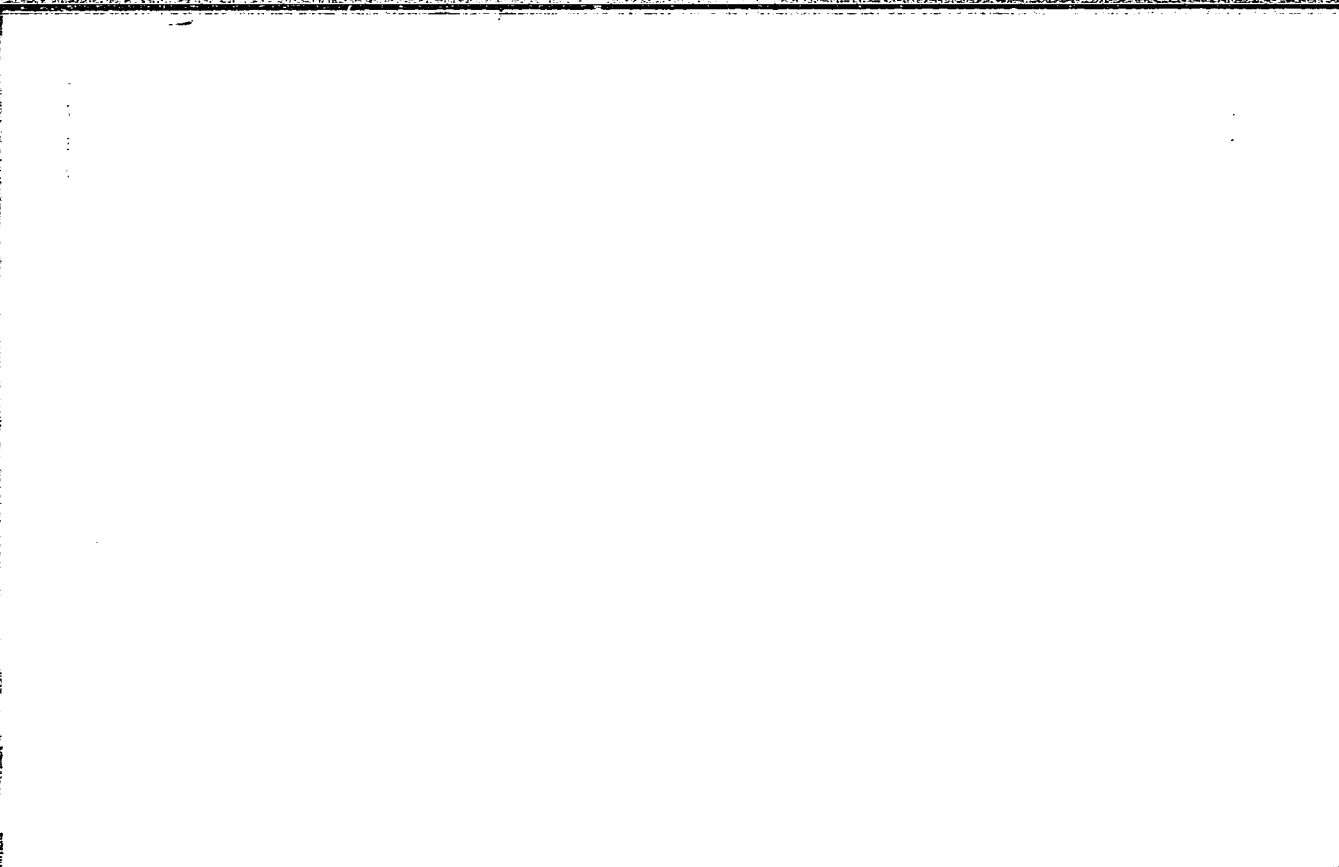
ROSSIKHIN, V.S.; TSIKORA, I.L.

Spectroscopic study of high-frequency discharges in gases and flames under atmospheric pressure. Izv. AN SSSR Ser. fiz. 19 no.1:18 Ja-F '55. (MIRA 8:9)

1. Dnepropetrovskiy gosudarstvennyy universitet  
(Spectrum analysis) (Spectrometer)

**"APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757030002-6**



**APPROVED FOR RELEASE: 03/14/2001**

**CIA-RDP86-00513R001757030002-6"**

*TsIKORA, I. L.*  
Category: USSR

B 9

Abs Jour: Zh--Kh, No 3, 1957, 7517

Author : Rossikhin, V. S. and Tsikora, I. L.

Inst : No given

Title : The Mechanism of the Formation of Certain Radicals in a High-Frequency Discharge

Orig Pub: Zh. Fiz. Khimii, 1956, Vol 30, No 2, 453-456

Abstract: The spectra produced by high-frequency discharges in mixtures of  $\text{CO}_2$  and  $\text{CCl}_4$  with  $\text{H}_2$  and  $\text{N}_2$  at pressures of 3-760 mm Hg have been photographed with a type ISP-22 and ISP-51 spectrograph. On the basis of an investigation of the intensity of the CN,  $\text{C}_2$ , OH, and CO bands and of the C and H line spectra as a function of the composition of the mixture and the time of

Card: 1/2

-4-

*Tsikora, I. L.*

USSR/Physical Chemistry - Molecule, Chemical Bond.

B-4

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3505.

Author : V.S. Rossikhin, I.L. Tsikora.

Inst : Dnepropetrovsk University.

Title : Study of Spectra of High Frequency Discharge in Gas Under Atmospheric Pressure.

Orig Pub: Nauch. zap. Dnepropetr. un-ta, 1956, 45, 9-13.

Abstract: The high frequency discharge spectra in air,  $\text{CO}_2$  and  $\text{C}_2\text{H}_2$  under atmospheric pressure produced by a damped oscillation generator (of the Tesla transformer type), or a tube generator were studied. In a discharge spectrum produced by a tube generator, ion bands and lines together with bands and lines of neutral molecules and atoms are present, while a discharge spectrum produced by a damped oscillation generator contains neutral molecule bands, i.e. the first discharge type is of a more "spark" character. Elementary processes proceeding at high fre-

Card : 1/2

-5-

USSR/Physical Chemistry - Molecule, Chemical Bond.

B-4

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3505.

quency discharges under atmospheric pressure are discussed, and the absence of CH bands in the discharge spectrum in  $C_2H_2$  is noted.

Card : 2/2

-6-



AUTHORS: Rossikhin, V.S. and Tsikora, I.L.

SOV/51-5-2-17/26

TITLE: On the Mechanism of Excitation of Atomic Carbon in the Inner Cone of the Acetylene-Oxygen Flame (O mekhanizme vzbuzhdeniya atomarnogo ugleroda vo vmutrennem konuse atsetileno-kislorodnogo plameni)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 2, pp 202-204 (USSR)

ABSTRACT: Atomic carbon was discovered in hydrocarbon flames by Lauer (Ref 1). The 2478.6 Å line of atomic carbon was found only in the spectrum of the inner cone of the acetylene-oxygen flame. Lauer ascribed this line to the reaction  $C_2 + O_2 \rightarrow CO_2 + C$ ; the authors consider it more likely that the strongly exothermic reaction  $C_2 + O_2 \rightarrow 2CO + 270 \text{ kcal/mole}$  is responsible for the 2478.6 Å line. The authors investigated the mechanism of formation of atomic carbon using spectroscopic data. The acetylene-oxygen flame spectra were photographed using spectrographs ISP-22 and ISP-51 with a self-collimated camera UF-85. Fig 1 shows the curves of blackening S of the  $C_2$ , CH bands and the 2478.6 Å C line. These curves are shown as functions of the amount of acetylene in the acetylene-oxygen flame. Fig 2 shows the distribution of intensities of the  $C_2$  and CH bands and of the C line along the

Card 1/2

SOV/51-5-2-17/26

On the Mechanism of Excitation of Atomic Carbon in the Inner Cone of the  
Acetylene-Oxygen Flame

height of the inner cone in the flame. Comparison of the curves of Fig 1 and 2 shows that in both cases the maximum of the C line coincides only with the maximum of the CH band. This suggests that the process of formation and excitation of atomic carbon involves the radical CH. The following process is suggested:  
 $\text{CH}(^2\Sigma) + \text{H}(^2S_{1/2}) \rightarrow \text{C} + \text{H}_2 + 4.5 \text{ ev.}$  Excitation of atomic carbon in the inner cone of the flame is due to transition of the carbon atom from the metastable state  $2p^2\ ^1S$  (produced by the reaction just given) to a higher state  $2p3s\ ^1P^o$ , with subsequent emission. There are 2 figures and 9 references, 2 of which are Soviet, 2 English, 2 translations, 1 German, 1 Japanese and 1 American.

ASSOCIATION: Dnepropetrovskiy gosudarstvennyy universitet (Dnepetrovsk State University)

SUBMITTED: January 7, 1958

Card 2/2 1. Carbon--Excitation 2. Carbon--Sources 3. Secondary emission  
4. Flames--Spectrographic analysis

ROSSIKHIN, V.S.; TSIKORA, I.L.

Mechanism of the attenuation of CH bands (violet system)  
in an arc cloud. Opt. i spektr. 11 no.3:415-417 S '61.  
(MIRA 14:9)

(Electric arc) (Cyanide--Spectra)

OSTROUMENKO, P.P.; ROSSIKHIN, V.S.; TSIKORA, I.L.

Spectroscopic study of the mechanism of  $C_2$  production in  
various types of discharges in a carbon dioxide atmosphere.  
Zhur. prikl. spekt. 3 no. 2:109-113 Ag '65. (MIRA 18:12)

1. Submitted Dec. 13, 1964.

L 06189-07 EWT(1)/EWP(m)/EEC(k)-2/EWP(t)/ETI/EWP(k)/EWP(1) IJP(c) WG/RTW/JD

ACC NR: AP6027735

SOURCE CODE: UR/0020/66/169/004/0858/0860

AUTHOR: Bugrim. Ye. D.; Lyutyy, A. I.; Rossikhin, V. S.; Tsikora, I. L.ORG: Dnepropetrovsk State University (Dnepropetrovskiy gosudarstvennyy universitet)TITLE: Vibrational relaxation of the C<sub>2</sub> molecule in the excited electronic state

SOURCE: AN SSSR. Doklady, v. 169, no. 4, 1966, 858-860

TOPIC TAGS: gas discharge spectroscopy, CC radical, Swan band, carbon, excited electronic state, vibration relaxation, diatomic molecule

ABSTRACT: A spectroscopic investigation was carried out of the effect of various gases on the emission of Swan bands of C<sub>2</sub> excited in an electrical discharge. A condensed discharge was passed through a tube (described) filled with the gas of interest at a reduced pressure. A clearly visible afterglow was observed along the discharge path, whose spectrum consisting of Swan bands of C<sub>2</sub> was investigated. The gases used were CO (pressure range, 10—45 mm Hg), 0.5% CO + 99.5% He (10—700 mm Hg), and 0.5% CO + 99.5% Ar (10—150 mm Hg). The results are reported and interpreted in terms of the theory of vibrational relaxation of diatomic molecules in the excited electronic state. Orig. art. has: 1 figure and 1 table. [W.A. 68] [SM]

SUB CODE: 29/ SUBM DATE: 06Oct65/ ORIG REF: 007/ OTH REF: 006

Card 1/1 afz

UDC: 535.337

L 31511-66 ENT(m)/EWP(j)/EWP(t)/ETI IJP(c) JD/WH/JG/RM  
ACC NR: AP6013019 SOURCE CODE: UR/0051/66/020/004/0568/0575

AUTHOR: Bugrim, Ye. D.; Lyuty, A. I.; Rossikhin, V. S.; Tsikora, I. L. 66  
ORG: none B

TITLE: Singularities in the excitation of the Swann bands of  $C_2$  in vapor jets of metals and organic compounds

SOURCE: Optika i spektroskopiya, v. 20, no. 4, 1966, 568-575

TOPIC TAGS: carbon, band spectrum, chemiluminescence, vapor state, emission spectrum, excited electron state, relaxation process

ABSTRACT: This is a continuation of earlier work (Opt. i spektr. v. 15, 406, 1963) where it was observed that the spectra of glowing metal vapor show a clearly pronounced chemiluminescence character in the presence of the vapor of carbon-containing compounds ( $CCl_4$ ,  $CHCl_3$ ,  $CHI_3$ ), and the observation of the Swann band system of  $C_2$ . The purpose of the present investigation was to study in greater detail the spectrum of the  $C_2$  molecule excited upon coalescence of vapors of several metals and  $CCl_4$ . The apparatus used for the vapor production was described in the earlier paper. The emission spectrum of the  $C_2$  molecule was obtained by means of a photoelectric setup based on a monochromator and photomultiplier. To

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UDC: 535.338.33 + 539.196.2

L 31511-66  
ACC NR: AP6013019

study the singularities of the  $C_2$  spectrum, the zone of the reaction of Li vapor and  $CCl_4$  was used, and it was found that the main features of the  $C_2$  spectrum in the metal-vapor reaction zone was an anomalous distribution of the intensities among the edges of the Swann system bands. The results have shown that variation of the temperature leads to a change in the population of the vibrational levels of the  $d^3\Pi_g$  electron state, and the character of the population of these levels was established for excitation of the  $C_2$  molecule in reactions of Li, K, Na, Cs, and Mg with  $CCl_4$ . An analysis of the relative intensities of the spectra and of the relative populations of the first vibrational levels in the  $d^3\Pi_g$  state indicates that the experimental results can be reconciled with the theory of vibrational relaxation in the excited electron states. Orig. art. has: 4 figures, 3 formulas, and 3 tables.

SUB CODE: 20/ SUBM DATE: 22Dec64/ ORIG REF: 008/ OTH REF: 007

Card 2/2 mc

L 9190-66 EWT(1)/EWT(m)/EPF(n)-2/EWP(b)/EWP(t) IJP(c) JD/JG/WW  
 ACC NR: AR6000115 SOURCE CODE: UR/0058/65/000/008/DO32/DO32  
 SOURCE: Ref. zh. Fizika, Abs. 8D261  
 AUTHORS: <sup>44,55</sup>Zhitkevich, V. F.; <sup>44,55</sup>Lyutyy, A. I.; <sup>44,55</sup>Rossikhin, V. S.; <sup>44,55</sup>Taikora, I. I. <sup>58</sup>  
 ORG: none  
 TITLE: Excitation of metals in the vapors of some organic compounds  
 CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, <sup>44,55</sup>M., t. 2, vyp. 1, 1964, 240-246  
 TOPIC TAGS: metal property, <sup>21,44,55</sup>optic spectrum, light excitation, flame, <sup>21,44,55</sup>chemiluminescence  
 TRANSLATION: The authors investigated the glow spectra observed upon coalescence of jets of metal vapors (Bi, Ca, Cd, Mg, Na, Pb, Tl, and Zn) with a mixture of some carbon-containing substances with air at atmospheric pressure at 1000K. Atomic lines with excitation energy up to 7.78 ev and bands of several molecules were observed in the glow spectra. Comparison of the spectra of the reaction zone of a hydrocarbon flame, in which salts of the above-mentioned metals were introduced, with the investigated glow has shown that the latter has a purely chemiluminescent nature and is characterized by high population of the upper energy levels of the atoms. It is established that carbon and oxygen are indispensable participants in the formation of the glow zone.  
 SUB CODE: 20

Cord 1/1 *ads*



ZHITKEVICH, V.P.; LYUTYY, A.I.; NESTERKO, N.A.; ROSSIKHIN, V.S.; TSIKORA, I.L.

Role of ions in a flame containing salt. *Izv.vys.ucheb,zav.;fiz.no.2:*  
~~78-84~~ '63. (MIRA 1685)

1. Dnepropetrovskiy gosudarstvennyy universitet imeni 300-letiya  
vqssoyedineniya Ukrainy s Rossiyei.  
(Ionization) (Flame) (Salts)

ZHITKEVICH, V.F.; LYUTYY, A.I.; ROSSIKHIN, V.S.; TSIKORA, I.L.  
Prinimal uchastiye BUGRIM, Ye.D.

Anomalous excitation of metals in the flames and vapors of certain  
organic compounds. Opt. i spektr. 15 no.3:405-412 S '63.  
(MIRA 16:10)

L 19965-63

EWP(q)/EWT(m)/EWP(B)/BDS

AFFTC/ASD

BW/JD/JG

S/0051/63/015/003/0405/0412

ACCESSION NR: AP3007280

AUTHOR: Zhitkevich, V.F.; Lyuty\*y, A.I.; Rossikhin, V.S.; Tsikora, I.L.

TITLE: Anomalous excitation of metals in flames and in the vapors of some organic substances

SOURCE: Optika i spektroskopiya, v.15, no.3, 1963, 405-412

TOPIC TAGS: flame spectrum, radical formation, anomalous excitation, Ca, Cd, Cs, Mg, Na, Pb, Tl, Zn

ABSTRACT: Gas flames consist of three zones: an inner reaction zone, an intermediate zone and an outer zone consisting of the combustion produced in equilibrium. The purpose of the study was to obtain data on the anomalous excitation of the spectrum lines of a number of metals (Ca, Cd, Cs, Mg, Na, Pb, Tl and Zn) in the vicinity of the reaction zone of an air-acetylene flame with the said metals introduced into the flame in the form of vapor with pure helium as the carrier. There were also observed the effects incident to injection of a hot metal vapor stream into a mixture of carbon-containing substances (CCl<sub>4</sub>, CHCl<sub>3</sub>, CHI<sub>3</sub> or CS<sub>2</sub>) with air. The flame and injection arrangements are shown in the Enclosure. The

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L 19965-63

ACCESSION NR: AP3007230

burner and evaporator were located at a distance of 35-40 cm from the entrance slit of an ISP-22 spectrograph. A table lists the atomic and ionic lines detected in two parts of the air-acetylene flame (points A and B in the figure) and in the carbon-containing substance mixture. Comparison of the data indicates that the predominant excitation mechanism involved in emission from the cold zone is reaction with oxygen. Elucidation of the precise decomposition and recombination reactions occurring in the vapors requires further investigation. In addition to atomic lines, there were observed some molecular lines as, for example, those of OH. The anomalous excitation mechanism is discussed but no definitive conclusions are drawn. I.B.Bugrim also participated in the work. Orig.art.has: 1 figure and 1 table.

ASSOCIATION: none

SUBMITTED: 02Jan63

DATE ACQ: 09Oct63

ENCL: 01

SUB CODE: PH

NO REF SOV: 003

OTHER: 009

Card <sup>2/3</sup>

ZHITKEVICH, V.F.; LYUTYY, A.I.; NESTERKO, M.A.; ROSSIKHIN, V.S.; TSIKORA, I.L.

Excitation of atomic spectra in the reaction zone of the acetylene—air  
flame. Opt. i spektr. 14 no.3:336-341 Mr '63. (MIRA 16:4)  
(Spectrum, Atomic) (Acetylene)

ZHITKEVICH, V.F.; LYUTYY, A.I.; NESTERKO, N.A.; ROSSIKHIN, V.S.; TSIKORA, I.L.

Spectroscopic study of dissociation and ionization processes in a  
flame. Opt. i spektr. 14 no.1:35-38 Ja '63. (MIRA 16:5)  
(Alkali metal halides--Spectra) (Flame)

LYUTYY, A.I. [Liutyi, A.I.]; NESTERKO, N.A.; ROSSIKHIN, V.S. [Rossykhin, V.S.];  
TSIKORA, I.L. [TSykora, I.L.]

Cases of deviation from thermodynamic equilibrium in the  
outer cone of a flame. Ukr.fiz.zhur. 6 no.6:851-853 N-D '61.,  
(MIRA 16'50)

1. Dnepropetrovskiy gosudarstvennyy universitet im. 300-letiya  
vossoyedineniya Ukrainy s Rossiyei. (Flame)  
(Spectrum analysis)

ROSSIKHIN, V.S.; TSIKORA, I.L.

Conference on Spectroscopy and its Uses, held at Zaporozh'ye.  
Opt.i spektr. 13 no.5:755-756 N '62. (MIRA 15:12)  
(Spectrum analysis—Congresses)



S/051/63/014/001/006/031  
E039/E120

AUTHORS: Zhitkevich, V.F., Lyutyy, A.I., Nesterko, N.A.,  
Rossikhin, V.S., and Tsikora, I.L.

TITLE: The spectroscopic study of dissociation and  
ionization processes in the flame

PERIODICAL: Optika i spektroskopiya, v.14, no.1, 1963, 35-38

TEXT: The effect of halogens on the line radiation from  
atoms and ions and also the halide and hydroxide bands of the  
alkaline earth metals and alkaline metals were studied. The  
alkali earth metals Mg, Ca, Sr, Ba, and the alkali metals Li, Na,  
K, Rb, Cs, are supplied to an acetylene-air flame by means of an  
atomizer from aqueous solutions of the chlorides. Radiation is  
observed from the outer cone of the flame, 1.5 - 2 cm above the  
inner cone. The introduction of halides into the flame  
containing these metals produces a displacement of the  
dissociation equilibrium leading to a decrease in the number of  
free atoms and of the hydroxides of these metals and an increase  
in number of their halides. The intensity of the ionic lines

Card 1/2

The spectroscopic study of ...

S/051/63/014/001/006/031  
E039/E120

of Sr and Ba is also increased by the introduction of halogens. This appearance of intense bands of the alkaline earth halides on the addition of halogens can be used for increasing the sensitivity of analysis for such elements as Mg and the halogens. There are 2 figures.

SUBMITTED: October 12, 1961

Card 2/2

REVA, A.D., TSIKORA, I.L., GRIBNIKOVA, A.M.

Spectrum analysis data on the ditribution of trace elements in the lumbar spinal cord. [with summary in English]. Biul.eksp.biol. i med. 46 no.7:60-63 Ja'58 (MIRA 11:7)

1. Iz kafedry fiziologii i biokhimii cheloveka i zhivotnykh (zav. - prof. P.Ye. Motsnyy) i kafedry optiki (zav. dots. V.S. Rosykhin) Dnepropetrovskogo gosudarstvennogo universiteta imeni 300-letiya vossoyedineniya Ukrainy s Rossiyei. Predstavlena deystvitel'nyy chlenom AMN SSSR V.N. Chernigovskim.

(SPINAL CORD, metabolism

trace elements, in lumbar part, spectrum analysis in cows (Rus))

(TRACE ELEMENTS, metabolism,

spinal cord, lumbar part, spectrum analysis in cows (Rus))

ACC NR: AN7013716

SOURCE CODE: UR/9003/66/000/041/0004/0004

AUTHOR: Turovskiy, M. (Sevastopol'); Tsikora, S. (Sevastopol')

ORG: none

TITLE: Automatic bathyscaphe

SOURCE: Izvestiya, no. 41, 18 Feb 66, p. 4, cols. 5-7

TOPIC TAGS: oceanographic research facility, oceanographic instrument, electronic measurement, computer application, oceanographic personnel, computer programming, computer storage device

SUB CODE: 08,09

ABSTRACT:

The Marine Hydrophysics Institute of the Academy of Sciences Ukrainian SSR has developed a deep-water automatic instrument whose configuration resembles that of a single-stage rocket. It can be submerged to a depth of 12,000 m and returns data on the physical processes transpiring in all layers to the very bottom. This autonomous abyssal turbulence meter has electronic measurement devices and memory units, a current source and automatic balancing devices.

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0933 2185

ACC NR: AN7013716

A half-ton plate is attached to serve as a weight; the instruments react to commands from a programming unit which is built into the apparatus. When the program of measurements is completed a special signal causes detachment of the half-ton weight and the apparatus floats to the surface. Upon reaching the surface a buoy is released to mark its position; this buoy has a transmitter which sends out special call letters facilitating recovery of the apparatus. The collected data are analyzed by computer. The apparatus was designed by Arkadiy Georgiyevich Kolesnikov, Corresponding Member of the Academy of Sciences UkrSSR, initially while head of the Department of Marine Physics at Moscow State University and later at the Marine Hydrophysics Institute. [JPRS: 34,593]

Card 2/2

TSIKOTO, Ippolit Antonovich; BOBY LEVA, L.V., red.; PONOMAREVA, A.A.,  
tekhn. red.

[Communism and agriculture] Kommunizm i sel'skoe khoziais-  
stvo. Moskva, Ekonomizdat, 1963. 78 p. (MIRA 16:4)

(Agriculture)

(Communist Party of the Soviet Union—Party work)

TSIKOTC, I.A.

23442 Organizatsiya rabot po ukorke urozhaya ovoshchnykh kultur i kartofelya.  
sad i ogorod, 1949, No 7, s. 37-40

SO: LETOPIS NO. 31, 1949

1. TSIKOTO, I. A.

2. USSR (600)

4. Collective Farms

7. Successes of the "Krasnyi Oktiabr'" Collective Farm. Sov. agron. 10, no. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.



TSIKOTO, I.

Agriculture - Bibliography

Books on the economics and organization of socialist agriculture. Sots. sel'khoz.  
no. 2, 1952.

MONTHLY LIST OF RUSSIAN ACQUISITIONS, LIBRARY OF CONGRESS, JULY 1952. UNCLASSIFIED.

TSIKOTO, Ippolit Antonovich, agronom-ekonomist; RABINOVICH, M.,  
red.; TROYANOVSKAYA, N., tekhn. red.

[Scientific farm management] Nauchnoe vedenie khoziaistva.  
Moskva, Gospolitizdat, 1962. 61 p. (MIRA 15:7)  
(Farm management)

ZHURIKOV, V.N.; IL'IN, M.A.; KRASAVIN, N.N.; PISKUNOV, V.T.;  
RUSINOV, I.V.; SUVOROVA, L.I.; TSIKOTO, I.A.;  
KONOVALOV, L., red.; MUKHIN, Yu., tekhn. red.

[Reader in agricultural economics] Kniga dlia chteniia po  
ekonomike sel'skogo khoziaistva. Moskva, Politizdat,  
1963. 287 p. (MIRA 17:1)

TSIKOTO, V. A.

Agriculture & Plant & Animal Industry.

Land utilization in the enlarged Molotov collective farm. Moskva, Goz. izd-vo selkhoz lit-ry, 1950.

Monthly List of Russian Accessions, Library of Congress, April 1952. UNCLASSIFIED